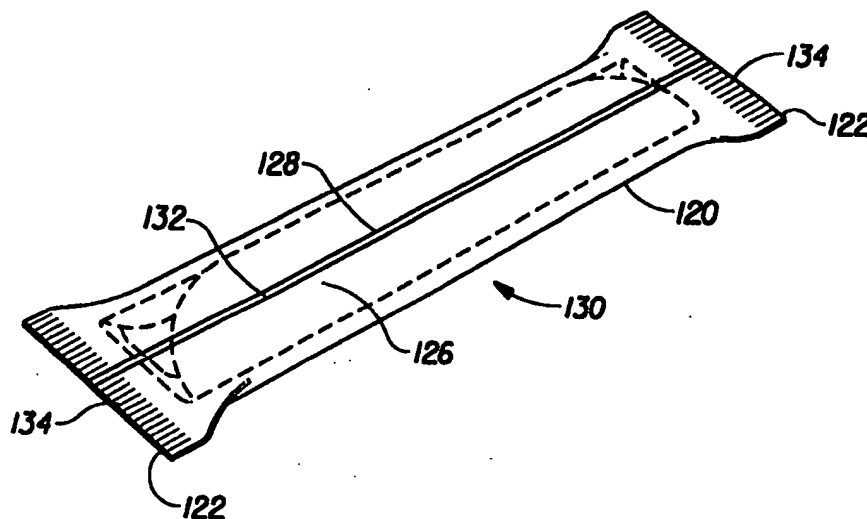




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(54) Title: INDIVIDUAL PACKAGES FOR ABSORBENT ARTICLES



## (57) Abstract

Individual packages for absorbent articles such as sanitary napkins, panty liners, and adult incontinence pads are disclosed. The individually packaged absorbent article comprises an absorbent article having a body-facing side and a garment-facing side, with an adhesive fastener on the garment-facing side. The absorbent article comprises of a primary absorbent component having a longitudinal axis, a width, and a pair of longitudinal side edges. The primary absorbent component is joined to a base pad to form at least a portion of the body-facing side of the absorbent article. In one preferred embodiment, the base pad is wider than the primary absorbent component so that the base pad had portions that extend laterally outward beyond each of the longitudinal side edges of the primary absorbent component to form extensions of the base pad. The wrapper for packaging the absorbent article comprises a flexible sheet where the extensions of the base pad are wrapped around the primary absorbent component relative to the longitudinal axis of the primary absorbent component. The wrapper forms a tubular package for the absorbent article.

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## INDIVIDUAL PACKAGES FOR ABSORBENT ARTICLES

### FIELD OF THE INVENTION

The present invention relates to absorbent articles such as sanitary napkins, panty liners, and adult incontinence pads. More particularly, the present invention relates to individual packages for absorbent articles of the foregoing type, including absorbent articles which have side wrapping elements that fold around or wrap the sides of a wearer's undergarments.

### BACKGROUND OF THE INVENTION

Absorbent articles such as sanitary napkins, panty liners, and incontinence pads are devices that are typically worn in the crotch region of an undergarment. These devices are designed to absorb and retain liquid and other discharges from the human body and to prevent body and clothing soiling. Sanitary napkins are a type of absorbent article worn by women in a pair of panties that is normally positioned between the wearer's legs, adjacent to the perineal area of the body.

While there are a great many variations on the specific structural features of absorbent articles, they are frequently presented to the consumer in the same manner. Essentially, the absorbent article, irrespective of what specific structural features are used, is packaged in a box or bag from which the consumer withdraws the ready-to-use articles as needed. Typically, the absorbent article comprises a fastener, such as a pressure-sensitive adhesive fastener on the garment-facing side of the absorbent article, for fastening the absorbent article to the wearer's undergarments. The adhesive fastener must be provided with a releasable cover strip for preventing the adhesive from sticking to surfaces other than the wearer's undergarments prior to use.

In addition, if the consumer needs only one article for later use, the consumer must take precautions to protect the article from soiling or contamination from the time it is removed from the box or bag until the article is used. This is a particular problem with respect to catamenial pads. For example, if a woman wishes to carry a catamenial pad with her for use away from home, she would have to take precautions to ensure the pad was not damaged or soiled when carried in her purse or pocket.

The protection of individual absorbent articles has been addressed in the prior art. Bandages, for example, are commonly packaged individually and sold to the consumer in some sort of container which holds a convenient number of the individually packaged articles. Catamenial pads have likewise been individually packaged and sold to the consumer in a container holding a convenient number of the individually packaged articles. U.S. Patent 2,750,033 entitled "Napkin Packaging" which issued to J.B. Pickens on June 12, 1956 and U.S. Patent 3,973,567 entitled "Wrapped Sanitary Napkins" which issued to S.S. Srinivasan et al. on August 10, 1976 disclose examples of individually packaged sanitary napkins. Although these wrappers protect the enclosed sanitary napkin, they require a quantity of wrapper material which is sufficient to cover the entire surface area of both surfaces of the sanitary napkin.

Other attempts at protecting individual absorbent articles have reduced the quantity of wrapper material required for the protection of each absorbent article. Notably, U.S. Patent 4,556,146 entitled "Individually Packaged Disposable Absorbent Article" which issued to Swanson et al. on December 3, 1985 and U.S. Patent 5,088,993 entitled "Sanitary Napkin with Individual Self Wrapping Means" which issued to Gaur on February 18, 1992 discloses examples of individually packaged catamenial pads which require wrapping material sufficient to cover only one major surface (i.e., either the body facing side or the garment facing side) of the sanitary napkin to allow protection for the sanitary napkin in a folded position.

The types of packages described above, however, are not ideally suitable for use with absorbent articles such as compound sanitary napkins, that have regions with relatively large caliper portions along their longitudinal centerline and relatively small caliper portions on their longitudinal side edges. Compound sanitary napkins are described in commonly assigned U.S. Patent No. 4,425,130 issued to DesMarais on January 10, 1984, and in Statutory Invention Registration H1614 entitled "Body Fitting Compound Sanitary Napkin," published in the name of Mayer, et al. on November 5, 1996. The compound sanitary napkin of DesMarais comprises a primary menstrual pad (a primary absorbent component) and a panty protector joined to one another at their corresponding ends in such a manner that the two constituents are free to move relative to one another along essentially their entire common length.

The packages described above are not ideal for use with absorbent articles such as compound sanitary napkins because when such articles are tri-folded, the folding of the

large caliper primary absorbent component will triple the thickness of the absorbent article along the longitudinal centerline while the thickness of the folded longitudinal side edges of the product will only increase slightly. These publications, also, do not disclose arrangements for packaging absorbent articles having flaps or other side wrapping elements.

Therefore, it is an object of the present invention to provide releasable cover arrangements for absorbent articles such as compound sanitary napkins that have regions with large caliper portions.

It is another object of the present invention to provide an individual package for such an absorbent article.

It is still another object to provide compact packaging that does not unduly compress and maintains the caliper of such an absorbent article when removed from the package.

It is still another object of the present invention to avoid the formation of wrinkles or crease lines in the absorbent article during packaging.

These and other objects of the present invention will be more readily apparent when considered in reference to the following description and when taken in conjunction with the accompanying drawings.

#### SUMMARY OF THE PRESENT INVENTION

The present invention is directed to individual packages for absorbent articles such as sanitary napkins, panty liners, and adult incontinence pads.

The individually packaged absorbent article comprises an absorbent article and a wrapper. The absorbent article has a body-facing side and a garment-facing side, and an adhesive fastener on its garment-facing side. The absorbent article preferably comprises a primary absorbent component that forms at least a portion of the body-facing side of the absorbent article. The primary absorbent component has a longitudinal axis, a width, and a pair of longitudinal side edges. The primary absorbent component is joined to a base pad. In one preferred embodiment, the base pad is wider than the primary absorbent

component so that the base pad has portions that extend laterally outward beyond each of the longitudinal side edges of the primary absorbent component. These portions form extensions of the base pad.

The wrapper for packaging the absorbent article comprises a flexible sheet. The extensions of the base pad are wrapped around the primary absorbent component relative to the longitudinal axis of the primary absorbent component. The extensions of the base pad can be wrapped in the same direction around the longitudinal axis of the primary absorbent component, or they can wrap around the primary absorbent component in opposite directions. When the extensions of the base pad are wrapped around the primary absorbent component, the wrapper forms a package, preferably a tubular package for the absorbent article.

#### BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as forming the present invention, it is believed that the present invention will be better understood from the following description which is taken in conjunction with the accompanying drawings, in which like reference numbers identify identical elements and wherein:

Fig. 1 is a top plan view of a preferred compound sanitary napkin.

Fig. 2 is a cross-sectional view of the sanitary napkin shown in Fig. 1, taken along line 2-2.

Fig. 3 is a bottom plan view of the sanitary napkin shown in Fig. 1.

Fig. 4 is a cross-sectional view of the sanitary napkin of Fig. 1 shown with side wrapping elements wrapped in an oppositely rotating direction around the longitudinal axis of the primary absorbent component.

Fig. 5 is a cross-sectional view of another embodiment of the sanitary napkin shown with side wrapping elements wrapped in the same rotating direction around the longitudinal axis of the primary absorbent component.

Fig. 6 is a perspective view of the preferred sanitary napkin within the packaging.

## DETAILED DESCRIPTION OF THE INVENTION

### 1. General Characteristics

The present invention is directed to individual packages for absorbent articles such as sanitary napkins, panty liners, interlabial devices, and adult incontinence pads. The individual package is preferably used for packaging an absorbent article that has at least one relatively large caliper portion and other relatively smaller caliper portions. In one preferred embodiment, the wrapper forming the individual package for the absorbent article comprises a flexible sheet that is used to form a tubular package for the absorbent article.

FIGS. 1-3 show one preferred embodiment of a sanitary napkin 20 that can be packaged in the individual package of the present invention. As shown in FIGS. 1-3, the sanitary napkin is in the form of a compound sanitary napkin. As shown in FIG. 1, the sanitary napkin 20 basically comprises a main body portion 22 and two side extensions or side wrapping elements 24. The main body portion 22 of the sanitary napkin 20 comprises a primary absorbent member (or "primary absorbent component" or "core tube") 40 and a secondary absorbent member (or "secondary absorbent component" or "base pad") 60 that are joined together by union means 70. The compound sanitary napkin 20 has two surfaces, a body-contacting or body-facing surface 20A, and a garment-facing or garment-contacting surface 20B. The primary absorbent member 40 and secondary absorbent member 60 also each have corresponding body-facing and garment-facing surfaces.

The compound sanitary napkin 20 has two centerlines, a longitudinal centerline L and a transverse centerline T. The term "longitudinal," as used herein, refers to a line, axis or direction in the plane of the compound sanitary napkin that is generally aligned with (e.g., approximately parallel to) a vertical plane which bisects a standing wearer into left and right body halves when the compound sanitary napkin is worn. The terms "transverse" or "lateral," as used herein, are interchangeable, and refer, to a line, axis, or direction which lies within the plane of the sanitary napkin that is generally perpendicular to the longitudinal direction.

FIG. 1 shows that the main body portion 22 of the sanitary napkin 20 comprises the portion of the sanitary napkin without the side wrapping elements 24. The main body portion 22 has two spaced apart longitudinal edges 26, two spaced apart transverse or end edges (or "ends") 28, which together form the periphery 30 of the main body portion 22 of the sanitary napkin 20. The main body portion 22 also has two end regions, which are designated first end region 32 and second end region 34. A central region 36 is disposed between the end regions 32 and 34. The end regions 32 and 34 extend outwardly from the edges of the central region 36 about 1/8 to about 1/3 of the length of the main body portion. A more detailed description of the central region and two end regions for a sanitary napkin is contained in U.S. Patent 4,690,680 issued to Higgins on September 1, 1987. The main body portion 22 of the sanitary napkin 20 is preferably hourglass shaped or dog bone shaped so that the main body portion 22 is narrower in width when measured across the central region 36 than at its end regions 32 and 34.

The embodiment of the sanitary napkin 20 shown in FIGS. 1-3 of the drawings comprises a relatively thick, but compressible and conformable, primary absorbent member 40 disposed on top of a relatively thin secondary absorbent member 60. The sanitary napkin 20 shown in FIG. 1 can be of any suitable size. Preferably, the embodiment of the sanitary napkin 20 shown in the drawings is relatively large in size so that it is able to cover the maximum area of the wearer's panties to reduce or eliminate soiling of the same by the wearer's bodily fluids, particularly for night time usage. It should be understood that the sanitary napkin shown is merely one preferred embodiment, and that the present invention is not limited to use with absorbent articles of the type or having the specific configurations shown in the drawings.

## 2. Individual Components of the Absorbent Article.

FIG. 2 shows the individual components of the main body portion 22 of the sanitary napkin 20. The main body portion 22 of the compound sanitary napkin shown in the drawings, as discussed above, basically comprises a primary absorbent member 40 and a secondary absorbent member 60.

### A. The Primary Absorbent Member.

#### 1. General Characteristics.

The primary absorbent member (or "primary absorbent component") 40 is the portion of the compound sanitary napkin 20 that is intended to absorb the bulk of bodily



fluids discharged by the user. The primary absorbent member 40 has side edges 44 and end edges 46 which together form the periphery 48 of the primary absorbent member 40. The primary absorbent member 40 comprises an absorbent structure, such as absorbent core 50, and an outer cover 52 superimposed on the absorbent core 50. (As used herein, the term "superimposed" means adjacent or juxtaposed, but not necessarily in contact with or joined to.) As shown in FIG. 2, the primary absorbent member 40 has a longitudinal axis, a vertical centerline V, a base B and an apex A vertically opposed to the base B. As used herein, the term "base" refers to that portion of the primary absorbent member 40 which is juxtaposed with the body-facing surface 60A of the secondary absorbent member 60.

The primary absorbent member 40 may be provided in a variety of suitable shapes. The shape of the primary absorbent member 40 will often be dictated by the shape of the absorbent core 50 (described below). Suitable shapes for the primary absorbent member 40 are cylindrical, rectangular, oval and trapezoidal. In the preferred embodiment shown in the drawings, the primary absorbent member 40 is generally cylindrical with an oval cross-section.

The primary absorbent member 40 is preferably roughly centered along the longitudinal and transverse centerlines L and T of the sanitary napkin 20. At least a portion of the base B of the primary absorbent member 40 is preferably joined with, or in face-to-face contact with the body facing surface 60A of the secondary absorbent member 60. (As used herein, the term "joined" encompasses configurations whereby an element is directly secured to another element by affixing the element to the other element; configurations whereby an element is indirectly secured to another element by affixing the element to an intermediate member or members which in turn are affixed to the other element; and configurations in which one element is integral with another element, i.e., one element is essentially part of the other element.)

The primary absorbent member 40 can be of any suitable size. In the preferred embodiment shown, the primary absorbent member 40 and the secondary absorbent member 60 are of the same length. However, it is quite possible for the primary absorbent member 40 to be shorter than the secondary absorbent member 60 and still function effectively. Thus, the length of the primary absorbent member 40 can range up to the lengths described herein for the secondary absorbent member 60. In conventionally sized embodiments, such as those intended for day time use, the primary absorbent member 40 is preferably from about 2 to 35 cm long, more preferably from about 10 to 35 cm long,

and most preferably from about 20 to 35 cm long. A particularly preferred primary absorbent member 40 for use in such a day time embodiment has a length of about 17 to 20 cm. The primary absorbent member 40 is preferably from about 0.5 to 5 cm wide at its base B, more preferably from about 0.5 to 4 cm wide, and most preferably from about 0.5 to 3 cm wide.

## 2. The Outer Cover.

The outer cover 52 comprises a component, at least a portion of which is liquid pervious to permit liquids to readily penetrate through its thickness. When the sanitary napkin 20 is in use, the outer cover 52 is in close proximity to the skin of the user. The outer cover 52 is preferably as compliant, soft feeling, and non-irritating to the user's skin as possible. The outer cover 52 should further exhibit good strikethrough and a reduced tendency to rewet, permitting bodily discharges to rapidly penetrate it and flow toward the core 50, but not allowing such discharges to flow back through the outer cover 52 to the skin of the wearer.

A suitable outer cover 52 may be manufactured from a wide range of materials such as woven and nonwoven materials; polymeric materials such as apertured formed thermoplastic films, apertured plastic films, and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic scrims. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polymeric fibers such as polyester, polypropylene, or polyethylene fibers); or from a combination of natural and synthetic fibers. The outer cover 52 may be a unitary member or it may be comprised of two or more elements joined together to form the outer cover 52. Further, any portion of the materials comprising the outer cover 52 may be coated, laminated, treated or otherwise manipulated to impart or enhance any desired characteristics such as strength, flexibility, or liquid perviousness of the outer cover.

A preferred outer cover 52 comprises an apertured formed film. Apertured formed films are preferred for the outer cover 52 because they are generally pervious to body exudates and if properly apertured, will reduce the likelihood of liquids passing back through the film and rewetting the wearer's skin. Accordingly, the surface of the formed film which is in contact with the body remains dry, thereby reducing body soiling and creating a more comfortable feel for the wearer. Further, if desired, formed films can be easily manufactured with non-apertured portions or regions that provide liquid impervious areas that prevent any liquids from passing therethrough. Suitable formed films are

described in U.S. Pat. No. 3,929,135, issued to Thompson on December 30, 1975; U.S. Pat. No. 4,324,246, issued to Mullane, et al. on April 13, 1982; U.S. Pat. No. 4,342,314, issued to Radel, et al. on August 3, 1982; U.S. Pat. No. 4,463,045, issued to Ahr, et al. on July 31, 1984; and U.S. Pat. No. 5,006,394, issued to Baird on April 9, 1991. One especially preferred outer cover 52 for the primary absorbent member 40 comprises a formed film described in one or more of the above patents and marketed on sanitary napkins by The Procter & Gamble Company of Cincinnati, Ohio as the "DRI-WEAVE" topsheet.

In a preferred embodiment, the body-facing surface of at least a portion of the outer cover 52 is made hydrophilic to help transfer exudates through the outer cover 52 more easily than if the body-facing surface was not hydrophilic. This diminishes the likelihood that body exudates will flow off the outer cover 52 rather than flowing into and being absorbed by the absorbent core 50. The body-facing surface of the outer cover 52 can be made hydrophilic by treating it with a surfactant. In a preferred embodiment, surfactant is incorporated into the polymeric materials of the formed film such as is described in such as described in U.S. Pat. No. 4,950,264 issued to Osborn on August 21, 1990.

The primary absorbent member 40 may comprise a wrapping for the absorbent core 50, such as acquisition layer 58 shown in FIG. 2. The acquisition layer 58 may be a separate component positioned between the outer cover 52 and the absorbent core 50, or it may be an integral part of a composite outer cover. The acquisition layer 58 may serve several functions including improving wicking of exudates over and into the absorbent core 50 and/or containing absorbent material in the absorbent core 50. By improving the wicking of exudates, the acquisition layer 58 provides a more even distribution of the exudates throughout the absorbent core 50. The acquisition layer 58 may be comprised of a variety of materials including tissues and nonwoven or woven webs of synthetic fibers including polyester, polypropylene, or polyethylene; natural fibers including cotton or cellulose; blends of such fibers; or any equivalent materials or combinations of materials. Examples of sanitary napkins having an acquisition layer are more fully described in U.S. Pat. No. 4,950,264 issued to Osborn and U.S. Pat. Application Serial No. 07/944,764, "Absorbent Article Having Fused Layers," filed October 7, 1992 in the name of Cree, et al. (PCT Publication No. WO 93/11725, published June 23, 1993). In preferred embodiments, the acquisition layer 58 may be joined to the outer cover 52. These components can be joined by any of the conventional means for joining webs together, including, but not limited to joining the outer cover 52 to the acquisition layer 58 with

adhesives such as by spray-gluing, by applying lines or spots of adhesives between the outer cover 52 and the acquisition layer 58, by wrapping the outer cover 52 about the acquisition layer 58, by fusing the outer cover 52 to the acquisition layer 58 with a plurality of discrete individual fusion bonds, or by any other means known in the art.

Referring now to FIG. 2, it can be seen that outer cover 52 completely wraps the absorbent core 50 of the primary absorbent member 40. In other embodiments, the outer cover 52 need not completely encircle the absorbent core 50. In such embodiments, the outer cover 52 may substantially encircle the absorbent core 50. (As used herein, the term "substantially encircle" means that the outer cover overlays more than half of the absorbent core, and more preferably most of the absorbent core.) In the embodiments where the outer cover 52 does not completely encircle the absorbent core 50, a channel or liquid passageway may be formed between the primary absorbent member 40 and the secondary member 60. The channel can provide a passageway for any liquids not retained by the primary absorbent member 40 to pass through to the secondary absorbent member 60 so that they may be absorbed and contained therein.

### 3. The Absorbent Core.

The absorbent core (or absorbent component) 50 used in the sanitary napkin 20 shown in the drawings acquires, absorbs, and contains body exudates. The absorbent core 50 also preferably maintains the shape of the primary absorbent member 40 so that the primary absorbent member 40 conforms to the shape of the wearer's body. Thus, the absorbent core 50 is preferably capable of absorbing and containing body exudates, and is compressible, conformable, resilient, and non-irritating to the wearer's skin.

The total absorbent capacity of the absorbent core 50 should be compatible with the intended exudate loading for the primary absorbent member 40. The primary absorbent member 40 preferably has a capacity equal to, and more preferably, greater than at least the lower end of the range of capacities of the sanitary napkins described in U.S. Patents 4,950,264 and 5,009,653 issued to Osborn. The primary absorbent member 40 may, for example, have a total capacity of between about 20 - 60 grams of sterile saline measured according to the procedure set out in U.S. Patent 5,009,653 issued to Osborn. Further, the absorbent capacity of the absorbent core 50 may be varied to accommodate wearers ranging in the expected amount of exudate fluid volume. For instance, a different absorbent capacity may be utilized for sanitary napkins intended for day time use as compared with those intended for night time use, or for sanitary napkins intended for use by teenage females as compared with those intended by more mature women.

The materials selected for use as the absorbent core 50 are preferably compliant, soft, comfortable, compressible, and resilient to enhance body fit and comfort of the primary absorbent member 40. Preferably, the absorbent core 50 is compressible so that the primary absorbent member 40 will deform under relatively small forces exerted by the external female genitalia that are experienced during normal use. In addition to being compressible, the materials comprising the absorbent core 50 are preferably conformable so that the primary absorbent member 40 is able to provide improved fit into and around the wearer's labia and perineum. It is also important that the primary absorbent member 40 be sufficiently resilient such that when subjected to normal wearing forces it does not permanently collapse. The absorbent core 50 provides the primary absorbent member 40 with the desired resilient characteristics so that the primary absorbent member 40 conforms to the contours of the body to provide intimate contact with the exposed genitalia of the female user. Intimate contact with the exposed female genitalia helps provide better transfer of liquid exudates from the user into the primary absorbent member 40 without allowing such liquids to bypass and/or run-off the primary absorbent member 40. While the resilient characteristics of the absorbent core 50 allow for improved fit, they must be balanced against the need for the product to be both soft and comfortable for the wearer.

The absorbent core 50 may comprise any material which is capable of absorbing or retaining liquids (e.g., menses and/or urine). The absorbent core 50 may be manufactured from a wide variety of liquid-absorbing materials commonly used in sanitary napkins and other absorbent articles such as comminuted wood pulp which is generally referred to as airfelt. Examples of other suitable absorbent materials include creped cellulose wadding; meltblown polymers including coform; chemically stiffened, modified or cross-linked cellulosic fibers; synthetic fibers such as crimped polyester fibers; peat moss; tissue including tissue wraps and tissue laminates; absorbent foams; absorbent sponges; superabsorbent polymers; absorbent gelling materials; or any equivalent material or combinations of materials, or mixtures of these. The configuration and construction of the absorbent core may also be varied. (i.e., the absorbent core may have varying caliper zones (e.g., profiled so as to be thicker in the center), hydrophilic gradients, superabsorbent gradients, or lower density and lower average basis weight acquisition zones; or may comprise one or more layers or structures). It should be understood, however that for the purposes of the individual package described herein, the material comprising the absorbent core is not critical.

In the embodiment shown in the drawings, the absorbent core 50 comprises an absorbent foam material. The absorbent foam material used in the absorbent core 50 can be made from the material described in the U.S. Patent Application Serial No. 08/542,497, "Foams Made From High Internal Phase Emulsions Useful as Absorbent Members For Catamenial Pads" filed in the names of John C. Dyer, et al., on October 13, 1995. Preferably, the foam material has been chopped into small pieces for ease of processing.

B. The Secondary Absorbent Member.

The second main component of the compound sanitary napkin embodiment shown in FIGS. 1 - 3, is the secondary absorbent member 60. The secondary absorbent member 60 primarily functions to protect the user's garments from soiling by absorbed fluids which may be expelled from the primary absorbent member 40 or which may inadvertently bypass the primary absorbent member 40. Thus, the secondary absorbent member 60 generally performs a different function from that of the primary absorbent member 40 and is preferably somewhat thinner and less bulky than the primary absorbent member 40.

The secondary absorbent member 60 can be of any suitable plan view shape and size. For instance, the plan view shape of the secondary absorbent member 60 can include but is not limited to generally rectangular, oval, hourglass, dog-bone, asymmetric and other shapes that are known in the art. In the embodiment shown in FIGS. 1-3, the secondary absorbent member 60 is preferably generally hourglass-shaped. The width of the secondary absorbent member 60 is preferably at least 1.5 times the width of the primary absorbent member 40. More preferably, the width of the secondary absorbent member 60 is at least 2 times the width of said primary absorbent member 40. Most preferably, the width of the secondary absorbent member 60 is in the range from about 3 to about 8 times the width of the primary absorbent member 40. Since the base pad 60 is wider than the primary absorbent component 40, the base pad 60 has portions that extend laterally outward beyond each of the longitudinal side edges 44 of the primary absorbent component 40 to form extensions 38 of the base pad 60. The side wrappings elements 24 preferably extend laterally outward from the longitudinal side edges of the extensions of the base pad 60.

The secondary absorbent member 60 can be of a variety of thicknesses. In the embodiment shown, the secondary absorbent member 60 is preferably very thin and

flexible or "ultra thin." The secondary absorbent member 60 preferably has a caliper of less than about 3.0 millimeters, more preferably less than about 2.6 millimeters, even more preferably less than about 2.2 millimeters, and most preferably less than about 2.0 millimeters. Examples of sanitary napkins that could serve as the secondary absorbent member 60 are described in U.S. Patents 4,950,254 and 5,009,653 issued to Osborn.

The secondary absorbent member 60, however, in an alternative embodiment may have significantly less absorbent capacity than the primary absorbent member 40. For example, the secondary absorbent member 60 may have a total capacity of between about 5 - 15 grams of bodily exudates. Preferably, the ratio of the total capacity of the primary absorbent member 40 to the total capacity of the secondary absorbent member 60 is between about 1:1 and about 10:1, and more preferably, is about 5:1.

The secondary absorbent member 60 preferably comprises at least two components. They comprise an absorbent element 62 and a liquid impervious backsheet 66 joined to the absorbent element 62. The absorbent element 62 may form the body contacting surface 60A of the secondary absorbent member 60. In other preferred embodiments, the secondary absorbent member 60 may comprise a liquid impervious backsheet 66, a liquid pervious topsheet 64 joined to the backsheet 66, and the absorbent element 62 may be positioned between the topsheet 64 and the backsheet 66. In yet other embodiments, the secondary absorbent member 60 may comprise an acquisition layer 68 in addition to or in place of the topsheet 64. These components of the secondary absorbent member 60 will now be examined in greater detail.

The topsheet 64 can be any liquid pervious material commonly used in sanitary napkins, disposable diapers, and the like. The topsheet 64 can be any of the materials described above as being useful in the outer cover 52 of the primary absorbent member 40, including, but not limited to nonwovens and apertured formed films.

The acquisition layer 68 of the secondary absorbent member 60 may comprise any of the materials described above with regard to the acquisition layer 58 of the primary absorbent member 40. In preferred embodiments, the secondary absorbent member 60 comprises an acquisition layer 68 disposed between the topsheet 64 and the absorbent element 62. However, embodiments are contemplated wherein the acquisition layer 68 replaces the topsheet 64, the absorbent element 62 or both. In such embodiments, the acquisition layer 68 provides any absorption characteristics desired in the secondary absorbent member 60.

The absorbent element 62 may be manufactured from a wide variety of liquid absorbent materials commonly used in disposable sanitary napkins, and other disposable absorbent articles. Examples of suitable absorbent materials include comminuted wood pulp, which is generally referred to as airfelt; creped cellulose wadding, modified cross-linked cellulose fibers such as those described in U.S. Patent No. 5,217,445 issued to Young, et al. on June 8, 1993; capillary channel fibers (fibers having intra-fiber capillary channels such as those described in U.S. Patent No. 5,200,248 issued to Thompson, et al. on April 6, 1993); absorbent foams such as those described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993; U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993; U.S. Patent No. 5,331,015 issued to DesMarais et al., on July 19, 1994; and U.S. Patent No. 5,387,207 issued to Dyer et al., on February 7, 1995); thermally bonded airlaid materials such as those material described in U.S. Patent No. 5,607,414, entitled "Catamenial Absorbent Structures Having Thermally Bonded Layers For Improved Handling of Menstrual Fluids and Their Use In Catamenial Pads Having Improved Fit and Comfort" issued to Richards, et al. on March 4, 1996; polyurethane foams, absorbent foams, absorbent sponges; synthetic staple fibers; polymeric fibers; hydrogel-forming polymer gelling agents ("absorbent gelling materials"); peat moss, or any equivalent materials or combinations of materials. In addition, since the absorbent capacity requirements of the secondary absorbent member 60 may be relatively low, the absorbent element 62 may comprise any of the materials described above as being useful in the acquisition layers 58 and 68. For this, paper tissue (either single or multiple plies) is also suitable for use in the absorbent element 62.

In one preferred embodiment, the absorbent element 62 is formed of from about 1 to about 5 plies of paper tissue. Paper tissue comprising one or more plies having a basis weight of from about 24 to about 48 grams per square meter and an apparent density of from about 0.10 to about 0.12 grams per cubic centimeter as made by the process described in U.S. Pat. No. 3,301,746 issued to Sanford, et al. on Jan. 31, 1967, has been found to be quite satisfactory for use as the absorbent element 62. Paper tissue made by the process described in U.S. Pat. No. 3,994,771 issued to Morgan, et al. on Nov. 30, 1976, can also be used to good advantage as the absorbent element 62. Wet strength resins and latex binders can be, and preferably are, used to provide additional strength to the paper tissue used in the absorbent element 62.

The backsheet 66 of the secondary absorbent member 60 is preferably impervious to liquids (e.g., menses and/or urine) and is preferably manufactured from a thin plastic



film, although other flexible liquid impervious materials may also be used. As used herein, the term "flexible" refers to materials which are compliant and will readily conform to the general shape and contours of the human body. In use, the backsheet 66 is interposed between the absorbent element 62 and the user's undergarments. The function of the backsheet 66 is to prevent exudates which may be expelled from or which inadvertently bypass the absorbent core 50 and exudates absorbed and contained in the absorbent element 62 from contacting and soiling the user's undergarments.

The backsheet 66 may comprise a woven or nonwoven material, polymeric films such as thermoplastic films of polyethylene or polypropylene, or composite materials such as a film-coated nonwoven material. Preferably, the backsheet is a polyethylene film having a thickness of from about 0.012 mm (0.5 mil) to about 0.015 mm (2.0 mil). Exemplary polyethylene films are manufactured by Clopay Corporation of Cincinnati, Ohio under the designation P18-0401 and microflex 1401. The backsheet is preferably embossed and/or matte finished to provide a more cloth like appearance. Further, the backsheet may permit vapors to escape from the absorbent element 62 (i.e., breathable) while still preventing exudates from passing through the backsheet.

The topsheet 64, the backsheet 66, and the absorbent element 62 may be assembled in a variety of configurations known in the art (including so called "sandwich" products and "tube" products). Several preferred configurations and features that the secondary absorbent member 60, or overall sanitary napkin can be provided with are described generally in the following patents: U.S. Patent 4,321,924, "Bordered Disposable Absorbent Article" issued to Ahr on March 30, 1982; U.S. Patent 4,425,130 issued to DesMarais on January 10, 1984; U.S. Patents 4,950,264 and 5,009,653, both entitled "Thin, Flexible Sanitary Napkin" issued to Osborn on August 21, 1990 and April 23, 1991, respectively; and U.S. Patents 5,234,422 and 5,308,346 issued to Sneller, et al.

The components of the secondary absorbent member 60, as shown in FIGS. 1 - 3, are preferably assembled in a sandwich construction in which the topsheet 64 and the backsheet 66 have dimensions that are generally larger than those of the absorbent element 62. The topsheet 64 is joined to the acquisition layer 68. The topsheet 64 is joined to the backsheet 66 in the region of the sanitary napkin that lies outboard of the absorbent element 62. Preferably, the topsheet 64 is joined to these components by a core bonding adhesive that is applied in a spiral pattern. The absorbent element 62 is preferably joined to the backsheet 66. Preferably, the absorbent element 62 and the backsheet 66 are joined using a core integrity adhesive applied in a plurality of strips of

adhesive, each of which comprises spirals of adhesive. Exemplary means for joining these components of the secondary absorbent member 60 comprises several lines of adhesive filaments swirled into a spiral pattern such as illustrated by the apparatus and method shown in U.S. Patent 3,911,173 issued to Sprague, Jr. on October 7, 1975; U.S. Patent 4,785,996 issued to Ziecker, et al. on November 22, 1978; and U.S. Patent 4,842,666 issued to Werenicz on June 27, 1989. The core integrity adhesive can be applied over the entire garment facing side of the secondary absorbent, over the whole product width (including the extensions of the backsheet that will lie beyond the edges of the absorbent element 62) or any portion thereof. Preferably, the core integrity adhesive is applied to the entire interface between the garment facing side of the topsheet 64 and the backsheet 68.

To form the compound sanitary napkin shown in the drawings, the primary absorbent member 40 and the secondary absorbent member 60 are joined by union means generally indicated as 70 in FIGS. 1 and 2. The precise nature of the union means is immaterial so long as the union means selected serves to join the primary absorbent member 40 and the secondary absorbent member 60 into the compound sanitary napkin 20 shown in the drawing with sufficient tenacity that the primary absorbent member 40 and the secondary absorbent member 60 are not disconnected during use. Union means such as adhesive attachment with well-known hot melt and pressure sensitive adhesives are quite satisfactory. If the nature of the components selected to construct the constituents of the compound sanitary napkin 20 so permit, heat welding, ultrasonic welding, dynamic mechanical bonds or a combination of any of the above-mentioned means can be used.

The sanitary napkin 20 shown in FIGS. 1-3 preferably also comprises a pair of side extensions (or "side wrapping elements") 24 for folding around the side edges of the wearer's panties (or other undergarment). As shown in FIG. 1, the main body portion 22 is narrower in width measured across its central region 36 than at its end regions 32 and 34. The side wrapping elements 24 extend from at least the central region 36 of the main body portion 22.

The side wrapping elements 24 each have a proximal edge 74 and a distal edge 76. The side wrapping elements 24 are joined to the main body portion 22 at their proximal edges 74. In the embodiment shown in the drawings, the proximal edges 74 of the side wrapping elements 24 are preferably concave (relative to the distal edges 76). The distal edges 76 of the side wrapping elements 24 are preferably approximately parallel to the longitudinal centerline L.

The side wrapping elements 24 of the embodiment shown in FIGS. 1-3 are preferably integral with the main body portion 22 of the sanitary napkin. In such a case, the topsheet 64 of the secondary absorbent member 60 may form a portion of the side wrapping elements 24 and the backsheet 66 may also form a portion thereof. For example, the topsheet 64 may form the body-facing surface of both the side wrapping elements 24 and the main body portion 22, and the backsheet 66 may form the garment-facing surface of the same. In alternative embodiments, the side wrapping elements 24 may be comprised of separate pieces of material or elements which are attached to the main body portion 22. When the side wrapping elements 24 comprise separate elements, they can be joined to the main body portion 22 by any techniques known to those skilled in the art. Such techniques include, but are not limited to adhesives, heat and/or pressure, ultrasonics, etc.

The side wrapping elements 24, whether they are integral with the main body portion or separate elements attached thereto, are each associated with main body portion 22 along a juncture. The juncture is typically a longitudinally oriented (or "longitudinal") juncture, such as line of juncture 78. As used herein, the terms "juncture" (or "line of juncture") refer to regions where the side wrapping elements 24 extend from or are joined to the main body portion 22. The junctures 78 can be any of various curved or straight lines, but they are not limited to lines. Thus, the junctures can comprise regions, flanges, strips, intermittent lines, and the like. In the sanitary napkin 20 illustrated in FIG. 1, line of juncture 78 is a generally longitudinally oriented region that is concave relative to the distal edges 76 of the side wrapping elements. When the side wrapping elements 24 are integral with the main body portion 22, the lines of juncture 78 may represent lines of demarcation between the main body portion 22 and the side wrapping elements 24, although it is not necessary that there be a precise line of demarcation.

As shown in Figure 1, each side wrapping element 24 is divided into a front half 80, and a back half 82 by a side wrapping element transverse centerline  $T_1$ . The side wrapping element transverse centerline  $T_1$  may coincide with the principal transverse centerline  $T$  of the sanitary napkin, but this is not absolutely required. In other embodiments where the main body portion 22 is not symmetrical along its length, the side wrapping elements 24 may be located more toward one end of the main body portion, and the side wrapping element transverse centerline  $T_1$  may, thus, be offset either to the front or to the rear of the principal transverse centerline  $T$ .

The side wrapping elements 24 are provided with weakened regions 84 that are more flexible than the adjacent regions 86 of the side wrapping elements. The weakened regions 84 are located so that on each side wrapping element 24, at least one weakened region, or portion thereof, lies on each side of the side wrapping element transverse centerline  $T_1$  and are at least partially disposed longitudinally away from the flap transverse centerline  $T_1$  in both directions. In the most preferred case, the weakened regions 84 are located along a portion of the fold line where the side wrapping elements 24 are folded around the wearer's panty crotch. In this preferred case, the weakened regions 84 may be located on or near the transverse centerline  $T_1$ . The fold line will typically be located along or adjacent the longitudinal juncture 78 of each side wrapping element 24. Since the terms "portions," "zones," and "regions," as used herein, refer to general areas, the weakened regions 84 are, thus, not limited to points which lie precisely on the line of juncture 78. Typically, they will include both those points which lie on the lines of juncture 78 as well as the surrounding areas of the sanitary napkin 20 which include the aforementioned fold lines. The longitudinal junctures, thus, may merely serve as approximations for the location of the weakened regions 84.

The weakened regions 84 are preferably also extensible. The weakened regions 84 may, thus, be thought of as comprising zones of differential extensibility (or "zones of extensibility"). The term "zones of differential extensibility," as used herein, refers to a portion of the side wrapping element 24 which is capable of extending a differing amount (preferably a greater amount), than adjacent regions 86 of the side wrapping element 24. The extensibility of the weakened regions 84 relieves the stresses which develop in the side wrapping elements 24 when they are folded around the sides of the wearer's panty crotch.

The weakened regions 84 in the embodiment shown in FIG. 1, are extensible in a direction between the longitudinal and transverse directions. In other embodiments, the extensibility of the weakened regions 84 can be oriented entirely in the transverse direction, more in the transverse direction than in the longitudinal direction, more in the longitudinal direction than the transverse direction, or entirely in the longitudinal direction. The side wrapping elements 24 may be provided with other optional weakened regions such as those shown along the transverse centerline  $T$  in FIG. 1.

The weakened regions 84 can comprise any structure that is more flexible and extensible than the adjacent regions 86 of the side wrapping elements 24. Suitable structures for the weakened regions 84 include, but are not limited to zones of material

that are mechanically strained, corrugated, "ring rolled" (the term "ring rolled" refers to a straining and/or activation achieved by feeding a material through intermeshing corrugated rolls), folded, formed into a Structural Elastic-Like Film (or "SELFed" structure) as described in U.S. Patent 5,518,801 entitled "Web Materials Exhibiting Elastic-Like Behavior," issued to Chappell, et al. on May 21, 1996, and in U.S. Patent Application Serial No. 08/124,180 filed by Mansfield, et al. (PCT Publication No. WO 94/10200).

The sanitary napkin 20 shown in FIGS. 1-3 has side wrapping elements 24 that have been provided with weakened regions 84 by ring rolling the desired regions of the side wrapping elements 24. The weakened regions 84 are ring rolled in accordance with methods described in U.S. Patent 4,107,364 issued to Sisson on August 15, 1978, U.S. Patent 5,143,679 issued to Gerald M. Weber, et al. on September 1, 1992, U.S. Patent 5,156,793 issued to Kenneth B. Buell, et al. on October 20, 1992, and U.S. Patent 5,167,897 issued to Gerald M. Weber, et al. on December 1, 1992. The ring rolling (also known as "pre-corrugating") forms corrugations in the weakened regions 84. The corrugations comprise ridges and valleys that are defined by fold lines 88. The fold lines 88 may form any angle desired relative to the principal longitudinal centerline L. In the preferred embodiment shown in FIGS. 1-3, the fold lines 88 form an angle of between about 40° - 80° with the principal longitudinal centerline L. This will provide the desired direction of extensibility.

The sanitary napkin 20 preferably also has fasteners that are adapted to secure the sanitary napkin 20 to the crotch region of an undergarment. FIGS. 2 and 3 show one preferred type of fastener, in the form of an adhesive attachment means, such as central pad adhesive 94 and side wrapping element adhesive 96. The fasteners used with the sanitary napkin shown in the drawings are, however, not limited to adhesive attachment means. Any type of fastener used in the art can be used for such purpose. For example, the sanitary napkin 20 could be secured to the wearer's undergarment by frictional fasteners, mechanical fasteners, or a combination of any of the foregoing types of fasteners. For simplicity, however, the fasteners will be described in terms of adhesive attachment means and are preferably pressure sensitive adhesive fasteners. Suitable pressure sensitive adhesive fasteners are described in greater detail in U.S. Patent 4,917,697.

The adhesive fasteners 94 and 96 can be arranged in any suitable configuration. FIG. 3 shows one possible panty fastener pattern. The panty fastener pattern shown in

FIG. 3 comprises a pair of longitudinally oriented central pad fasteners 94 that lie on opposite sides of the principal longitudinal centerline L. The longitudinally oriented central pad fasteners 94 shown in FIG. 3 preferably extend substantially the entire length of the absorbent element 62 of the secondary absorbent member 60. The longitudinally oriented central pad fasteners 94 preferably each have an inside edge 94A which is generally linear. The inside edges 94A of the longitudinally oriented fasteners 94 are preferably spaced away from each other and from the principal longitudinal centerline L of the sanitary napkin 20. This allows a longitudinally oriented central region of the sanitary napkin 20 (that does not have a fastener thereon) to move apart from the wearer's panties and move into close contact with the wearer's body. The longitudinally oriented central pad fasteners 94 preferably have outside edges 94B and ends 94C that are shaped similarly to the outer edges of the absorbent element 62 of the secondary absorbent member 60. This provides a central pad fastener 94 that is generally hourglass shaped with a longitudinally oriented gap in the center. In addition to the longitudinally oriented central pad fasteners 94, the sanitary napkin 20 preferably has two side wrapping element fasteners 96 on each side wrapping element 24 one of which lies on each side of the side wrapping element transverse centerline T. It is to be understood that this is only one possible fastener configuration, and that many other configurations are possible.

The adhesive attachment means, such as the central pad adhesive 94 and the side wrapping element adhesive fasteners 96, may each be covered by separate removable release liners to keep the adhesives from sticking to extraneous surfaces prior to use. A suitable release liner that can be used for the side wrapping element fasteners 96 is described in U.S. Patent Application Serial No. 08/247,912 filed May 23, 1994, entitled "Absorbent Article Having Flaps With Unitary Release Strip" in the name of Osborn, which was originally filed June 5, 1990 (PCT Publication No. WO 91/18574, published December 12, 1991). As FIGS. 4 and 5 show, in this embodiment, the central pad adhesive 94 and the side wrapping element adhesive fasteners 96 are covered by a unitary releasable liner 110.

FIGS. 4 and 5 show two possible ways of covering the adhesive fasteners on the garment facing side of the sanitary napkin. In the embodiment shown in FIG. 4, the side wrapping elements 24 are wrapped in an oppositely rotating direction around the primary absorbent component 40. The side wrapping elements 24 are preferably wrapped about 1/4 to 3/4 of a revolution, relative to the longitudinal axis,  $L_A$ , of the primary absorbent

component 40, and more preferably about  $2/3$  of a revolution. In this embodiment, the central pad adhesive fasteners 94 and at least one side wrapping element adhesive fastener 96 are releasably attached to the inwardly oriented face 114 of the unitary release liner 110. FIG. 4 shows one of the longitudinal side edges 112 of the unitary release liner 110 can be folded back onto itself so that the outwardly oriented face 116 of the unitary release liner 110 is releasably attached to at least one side wrapping element adhesive fastener 96. The unitary release liner 110 is positioned in such a way as to provide a unitary covering for the adhesive fasteners 94 and 96.

The embodiment in FIG. 5 shows the side wrapping elements 24 are wrapped in the same rotating direction around the primary absorbent component 40 relative to the longitudinal axis of the primary absorbent component 40 preferably about  $1/4$  to  $3/4$  of a revolution, and more preferably  $2/3$  of a revolution. In this embodiment, the adhesive fasteners 94 and 96 that are positioned on one side of the sanitary napkin 20 relative to the longitudinal axis of the primary absorbent component 40 are attached to the outwardly oriented face 116 of the unitary releasable liner 110. (The description of the adhesive fasteners being on one side of the sanitary napkin refers to when the side wrapping elements are extended outward to the sides of the sanitary napkin prior to wrapping the same.) The adhesive fasteners on the opposite side of the sanitary napkin 20 relative to the longitudinal axis of the primary absorbent component 40 are attached to the same unitary release liner 110 on the liner's inwardly oriented face 114 while the side wrapping elements 24 are wrapped in the same rotating direction around the primary absorbent component 40 relative to the longitudinal axis,  $L_A$ , of the primary absorbent component 40. The unitary release liner 110 is positioned in such a way as to provide a unitary covering for the adhesive fasteners 94 and 96.

In alternative embodiments, the sanitary napkin 20 need not have side wrapping elements 24. For example, the sanitary napkin can be provided in the configuration of any of those sanitary napkins described in Statutory Invention Registration H1614 entitled "Body Fitting Compound Sanitary Napkin," published in the name of Mayer, et al. on November 5, 1996. A suitable individually packaged article of the present invention without side wrapping elements can be accomplished by wrapping the extensions 38 of the secondary absorbent member in either the same or oppositely rotating direction in the manner described herein, and providing a unitary covering for the adhesive fasteners therein.

FIG. 6 shows an absorbent article packaged in a cover arrangement (also referred to as a "releasable wrapper") 120 wherein the sanitary napkin can be suitably wrapped as described in the embodiments of FIGS. 4 and 5 to form a tubular package 130. The releasable wrapper 120 may be made of one or more sheets of material. The wrapper 120 may comprise a two component arrangement comprising the wrapper 120 that is combined with the unitary releasable liner 110 as described herein by attaching the releasable liner 110 to the releasable wrapper 120 with an adhesive means. In alternative embodiments, the releasable wrapper 120 may comprise a single sheet that both covers the adhesive fasteners 94 and 96 and provides an individual package for the sanitary napkin 20.

In the particular embodiment shown in FIG. 6, the releasable wrapper 120 has a pair of end edges (or "ends") 122 which extend beyond the end edges 28 of the sanitary napkin 20. The releasable wrapper 120 also has a pair of longitudinal side margins 126. The side wrapping elements 24 are wrapped in an oppositely rotating direction around the primary absorbent component and the adhesive fasteners in the sanitary napkin are covered with a unitary release liner. The sanitary napkin with release liner thereon is placed in the releasable wrapper 120. The releasable wrapper 120 is wrapped around the folded sanitary napkin to form tubular package. One of the longitudinal side margins 126 of the releasable wrapper is folded back onto itself to form a narrow strip 132. The longitudinal seam 128 is formed by superimposing the longitudinal side margin 126 of the wrapper 120 onto the narrow strip 132 and sealing using an adhesive. The end edges 122 are preferably frangibly sealed together to close off the ends of the package. Suitable methods for frangibly sealing the end edges 122 of a package are described in U.S. Patent 4,556,146 issued to Swanson, et al., U.S. Patent 5,181,610 issued to Quick, and U.S. Patent 5,462,166 issued to Minton, et al. In alternate embodiments, suitable for use with either folded configuration of FIGS. 4 or 5, the releasable wrapper 120 could be omitted, and the unitary release liner 110 could be made of sufficient size that it overlaps itself and extends beyond the end edges 28 of the sanitary napkin and is sealed as described above to serve as a releasable wrapper for the sanitary napkin.

The sanitary napkin 20 is removed for use by peeling open the longitudinal seam 128. Pulling the narrow strip 132 breaks the frangible seals 134 along the end edges 122 and opens the longitudinal seam 128. In a preferred embodiment, the narrow strip has resealable qualities that is provided by an adhesive means that has releasable and resealable qualities, which will allow the user to use the cover arrangement 120 for disposal of a soiled sanitary napkin by rewrapping the sanitary napkin in the cover



arrangement and resealing the package with the narrow strip. Suitable methods for providing a disposal means is described in U.S. Statutory Invention Registration H1363 issued to Leeker on October 4, 1994.

The releasable wrapper or cover arrangement 120 may be made from thermoplastic films, preferably water impervious, and may be coated to facilitate easy and convenient manipulation from adhesive fasteners. These and other properties of a suitable releasable wrapper are described in U.S. Patent 5,484,636 issued to Berg, et al. and U.S. Patent 5,462,166 issued to Minton, et al.

In other alternative embodiments, the sanitary napkin 20 need not be in the form of a compound sanitary napkin. For example, a sanitary napkin can be provided in the configuration of any of those sanitary napkins described in allowed U.S. Patent Application Serial No. 08/563,879, filed November 21, 1995 (PCT International Publication No. WO 94/16658, entitled "Generally Thin, Flexible Sanitary Napkin With Central Absorbent Hump," published in the name of Osborn, et al. on August 4, 1994). In other alternative embodiments, the sanitary napkin can be provided in the configuration of the sanitary napkin described in U.S. Patent Application Serial No. 08/531,533, entitled "Absorbent Article With Clean Appearance and Capacity Signal Means" filed September 21, 1995, in the name of Hammons, et al. (P&G Case 5823) with the foam described herein in the center region of the sanitary napkin. Thus, the present invention can comprise a package for any variety of types of absorbent articles having a raised portion along its longitudinal centerline, and portions that lie laterally outboard of the raised portion which are wrapped around the raised portion for packaging.

In other alternative embodiments, rather than having the side wrapping elements 24 described herein, the sanitary napkin 20 may have flaps which extend laterally from the side edges of the main body portion 22. Patents describing flaps suitable or adaptable for use with the secondary absorbent member 60 of the sanitary napkin 20 shown in the drawings include U.S. Pat. No. 4,687,478 issued to Van Tilburg on Aug. 18, 1987; U.S. Pat. No. 4,589,876 issued to Van Tilburg on May 20, 1986; and U.S. Patent No. 5,389,094 issued to Lavash, et al. on February 14, 1995.

Optionally, the secondary absorbent member 60 may comprise components that naturally wrap the sides of a wearer's panties. A sanitary napkin having components that naturally wrap the sides of a wearer's panties suitable for use with the secondary absorbent member of the compound sanitary napkin 20 shown in the drawings are disclosed in U.S. Patent No. 5,584,829, entitled "Absorbent Article having Panty

Covering Components that Naturally Wrap the Sides of Panties", issued to Lavash, et al on December 17, 1996 and U.S. Patent No. 5,558,663 entitled "Absorbent Articles Having Undergarment Covering Components with Zones of Extensibility", issued to Weinberger, et al on September 24, 1996.

The disclosures of all patents, patent applications (and any patents which issue thereon, as well as any corresponding published foreign patent applications), and publications mentioned throughout this description are hereby incorporated by reference herein. It is expressly not admitted, however, that any of the documents incorporated by reference herein teach or disclose the present invention.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention.

What is claimed is:

1. An individually packaged absorbent article comprising:

an absorbent article having a body-facing side, a garment-facing side and an adhesive fastener on said garment-facing side, said absorbent article comprising a primary absorbent component forming at least a portion of the body-facing side of said absorbent article, having a longitudinal axis, a width, and a pair of longitudinal side edges, said primary absorbent component being joined to a base pad, wherein said base pad is wider than said primary absorbent component so that said base pad has portions that extend laterally outward beyond each of the longitudinal side edges of said primary absorbent component to form extensions of said base pad; and

a wrapper for packaging said absorbent article, said wrapper comprising a flexible sheet, wherein said extensions of said base pad are wrapped around said primary absorbent component relative to the longitudinal axis of said primary absorbent component, and said absorbent article, with said extensions wrapped around said primary absorbent component, is packaged in said wrapper.

2. The individually packaged absorbent article of Claim 1 wherein said base pad has a pair of longitudinal side edges and said base pad comprises a pair of side wrapping elements for folding around a side edge of a wearer's undergarment, said side wrapping elements being joined to said base pad and extending laterally outward beyond at least a portion of each of the longitudinal side edges of said base pad.
3. The individually packaged absorbent article of Claim 2 wherein said side wrapping elements and base pad have a garment-facing side and said side wrapping elements and base pad each have an adhesive fastener on their said garment-facing side.
4. The individually packaged absorbent article of Claim 3 wherein said side wrapping elements are wrapped in an oppositely rotating direction around the longitudinal axis of said primary absorbent component.

5. The individually packaged absorbent article of Claim 3 wherein said side wrapping elements are wrapped in the same rotating direction around the longitudinal axis of said primary absorbent component.
6. The individually packaged absorbent article of Claim 3 wherein said wrapper has a longitudinal dimension, a traverse dimension, an inwardly oriented face, an outwardly oriented face, a pair of longitudinal side edges, pair of end edges and a pair of ends, and said adhesive fastener on said side wrapping elements and said base pad is releasably affixed to said wrapper for packaging said absorbent article.
7. The individually packaged absorbent article of Claim 6 wherein at least a portion of said inwardly oriented face and at least a portion of said outwardly oriented face of said wrapper are releasable from said adhesive fasteners.
8. The individually packaged absorbent article of Claim 7 wherein said wrapper wraps said absorbent article and said longitudinal side edges are superimposed on the other to form a longitudinal seam.
9. The individually packaged absorbent article of Claim 8 wherein said longitudinal seam comprises a narrow strip wherein the said longitudinal side edge is folded back onto itself to form said narrow strip.
10. The individually packaged absorbent article of Claim 9 wherein said narrow strip is resealable.
11. The individually packaged absorbent article of Claim 7 wherein said wrapper wraps said absorbent article and said end edges are superimposed onto each other to form a pair of end seams.
12. The individually packaged absorbent article of Claim 4 wherein said adhesive fastener on said side wrapping elements and said adhesive fastener on said base pad are releasably attached to said wrapper by positioning said inwardly oriented face of said releasable wrapper onto said adhesive fastener of said base pad and onto said adhesive fastener on at least one said side wrapping element and positioning said outwardly oriented face of said releasable wrapper onto said adhesive fastener on at least one other said side wrapping element.

13. The individually packaged absorbent article of Claim 12 wherein said wrapper forms a tubular package for said absorbent article.
14. The individually packaged absorbent article of Claim 5 wherein said adhesive fastener on at least one said side wrapping elements is attached to said releasable wrapper by positioning said inwardly oriented face on said releasable wrapper onto said adhesive fastener on said side wrapping element and by positioning said adhesive fastener of said base pad onto said adhesive fastener on at least one said side wrapping element.
15. The individually packaged absorbent article of Claim 14 wherein said wrapper forms a tubular package for said absorbent article.
16. The individually packaged absorbent article of Claim 1 wherein said wrapper forms a tubular package for said absorbent article.
17. The individually packaged absorbent article of Claim 1 wherein said primary absorbent component comprises an elongated element.
18. The individually packaged absorbent article of Claim 1 wherein, said primary absorbent component comprises a tubular structure.
19. The individually packaged absorbent article of Claim 18 wherein said primary absorbent component has absorbent material therein.

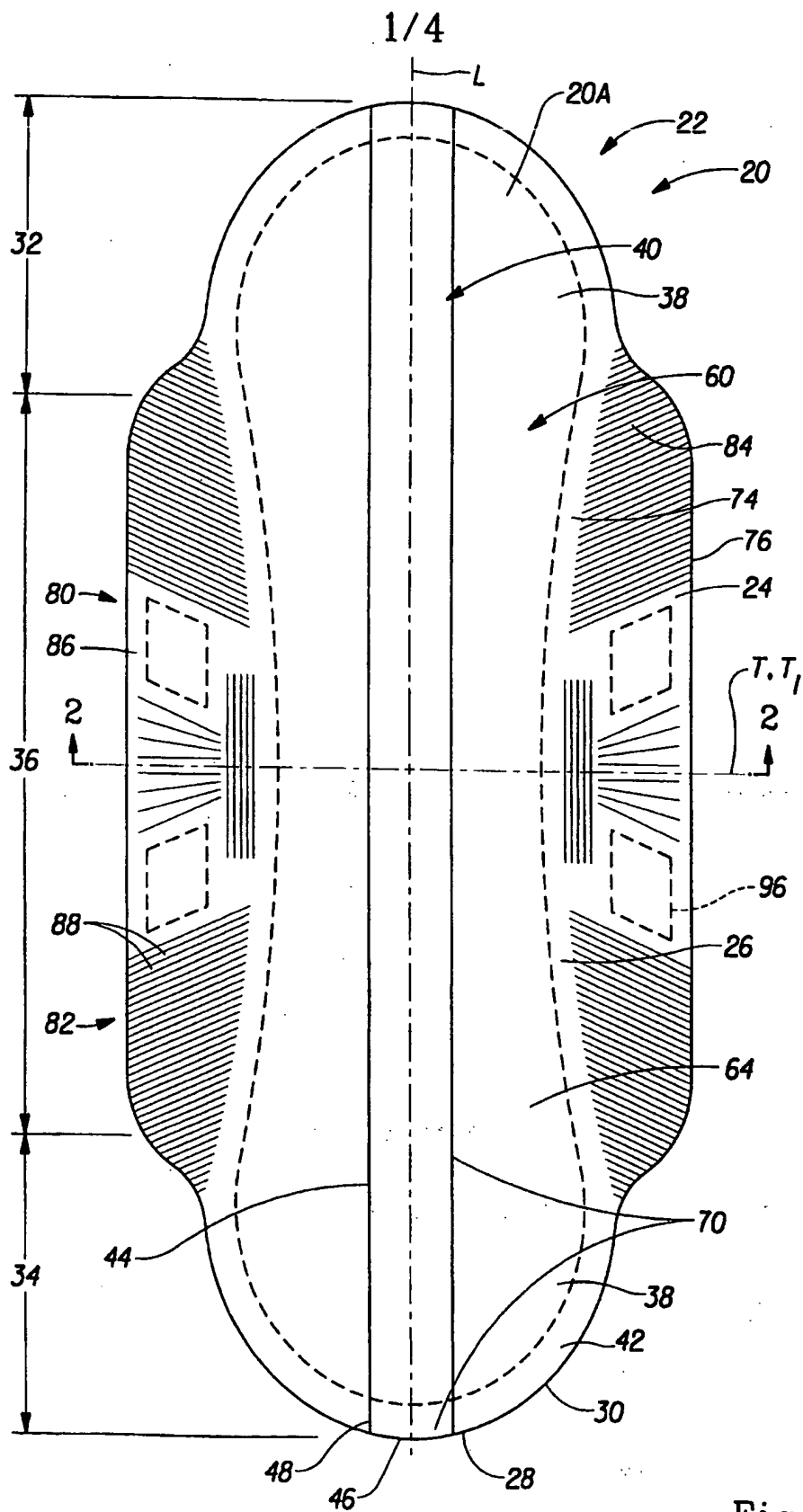


Fig. 1



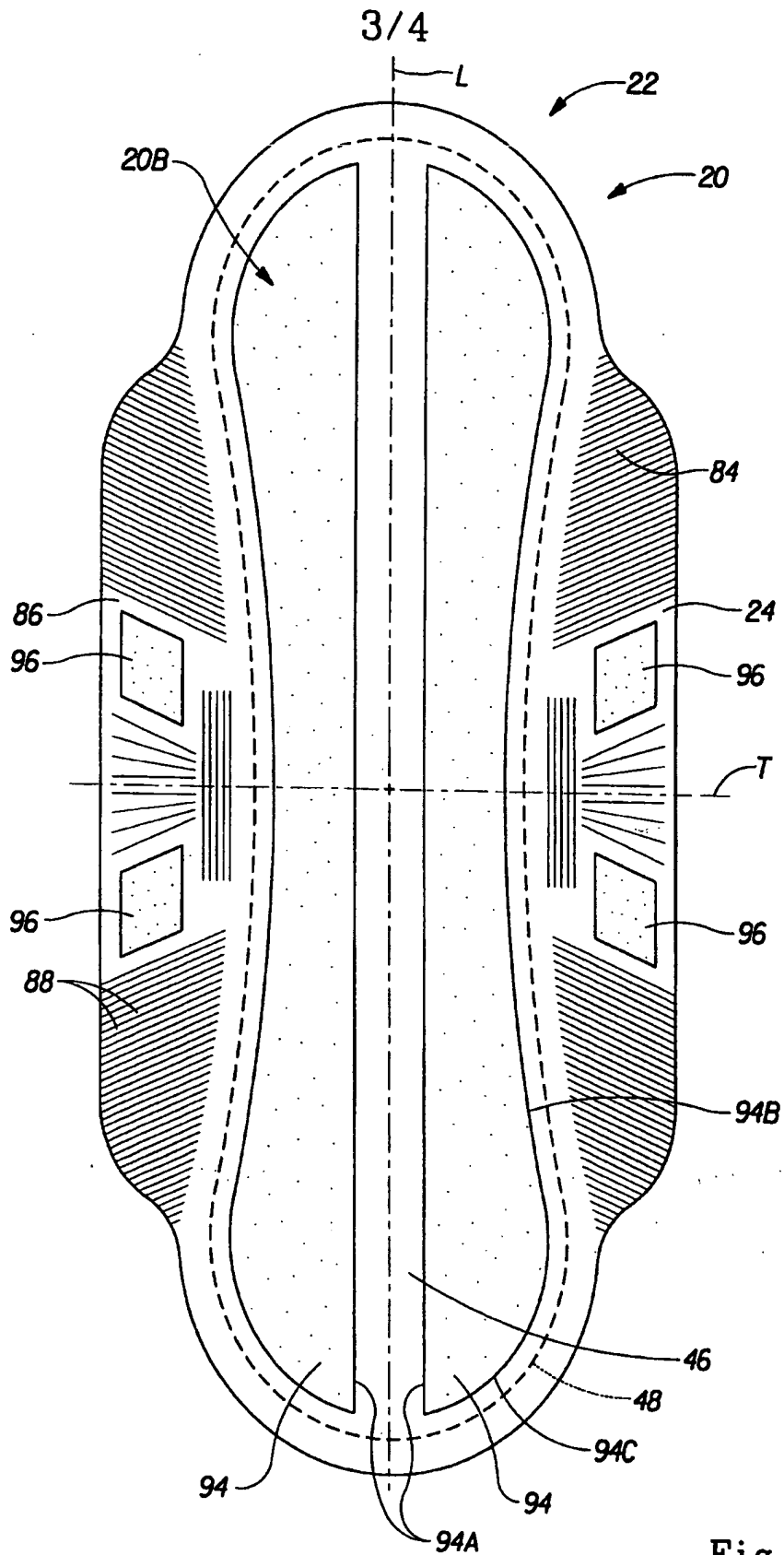


Fig. 3



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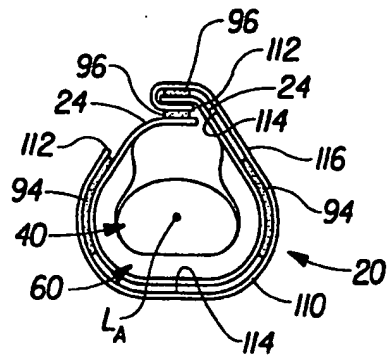


Fig. 4

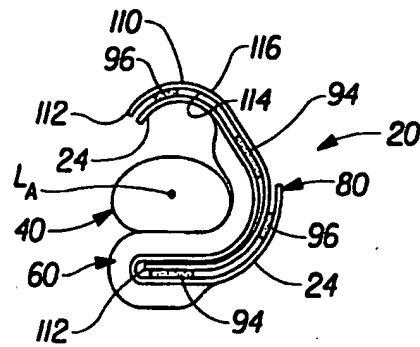


Fig. 5

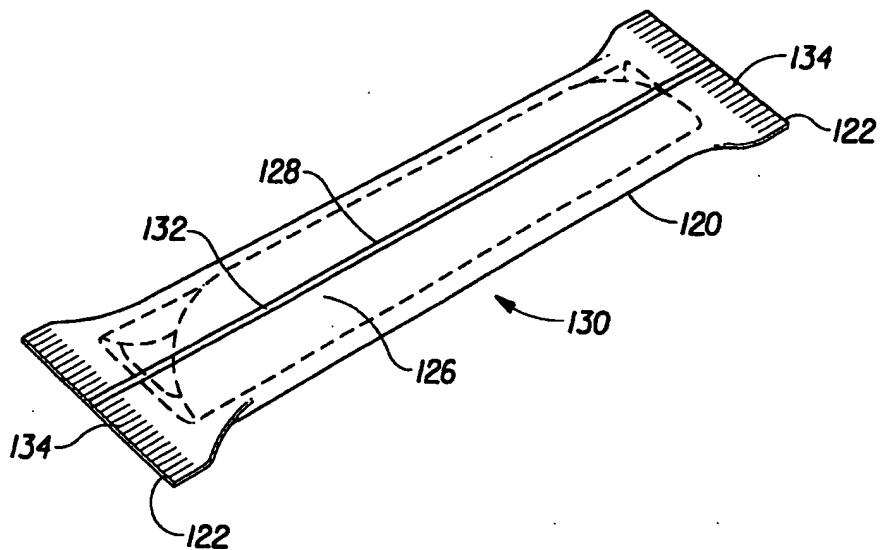


Fig. 6

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/14882

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96 27351 A (PROCTER & GAMBLE) 12 September 1996 see claims; figures	1
A	EP 0 764 434 A (PROCTER & GAMBLE) 26 March 1997 see claims; figures	1-5
A	US 4 765 477 A (NORENBERG CARL-DANIEL ET AL) 23 August 1988 see claims; figures	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

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- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- "&" document member of the same patent family

Date of the actual completion of the international search

29 October 1998

Date of mailing of the international search report

05/11/1998

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/14882

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9627351 A	12-09-1996	AU 4867596 A	23-09-1996
		CA 2213296 A	12-09-1996
		EP 0814738 A	07-01-1998
		US 5695324 A	09-12-1997
EP 0764434 A	26-03-1997	AU 7104996 A	09-04-1997
		WO 9710786 A	27-03-1997
US 4765477 A	23-08-1988	SE 450462 B	29-06-1987
		AU 594313 B	08-03-1990
		AU 5033385 A	05-06-1986
		DE 3541763 A	28-05-1986
		FR 2578227 A	05-09-1986
		GB 2167382 A, B	29-05-1986
		JP 61164975 A	25-07-1986
		NL 8503239 A	16-06-1986
		SE 8405953 A	27-05-1986